CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

MEMORANDUM

TO: John Robertus
Executive Officer

FROM: Peter Michael
Staff Environmental Scientist

DATE: November 4, 2004

SUBJECT: **Support of Beneficial Uses**
Duke Energy South Bay Power Plant
Order No. R9-2004-0154

On September 8, 2004 San Diego Regional Board Member Ghio asked for documentation of findings that the discharge from the plant causes a condition in which water quality does not support all Beneficial Uses in the discharge channel. The support for Basin Plan Beneficial Uses listed for San Diego Bay is discussed below. This discussion is based on the premise that water quality should support balanced indigenous communities throughout the Bay, including the discharge channel.

The following general observations relate to measurement tools and evidence of impairment of beneficial uses:

> Changes in Eelgrass Distribution is Probably Not an Ambient Condition. Eelgrass is affected primarily by the availability of light. The 316(a) report noted that while not adding to the total amount of turbidity in the south Bay, flows from the plant redistributed turbidity and extended the plume farther out in the discharge channel, thereby affecting where eelgrass beds could occur.
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> Pollution Credits Have Not Been Requested. Duke Energy appears to request credits for degradation in one area if the discharge produces enhancement in another area. Unless Duke Energy applies for a mixing zone and receives authorization for one, the Regional Board will assume that indigenous species should be supported by water quality throughout the discharge channel.
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> The Benthic Response Index (BRI) Was Designed to Measure Responses to Chemicals and May or May Not Reflect Responses to Temperature. The BRI investigation was run at the request of fish and wildlife agencies with the support of the Regional Board. The BRI evaluation did not show impairment of the benthic community. However, according to Mr. Ananda Ranasinghe of the Southern California Coastal Water Research Project (SCCWRP), a researcher who has developed BRIs for harbors in California, no temperature sensitive index

for benthic communities has been developed for southern California power plants along temperature/oxygen gradients. Therefore, the BRI may or may not be an appropriate measure of changes to indigenous communities caused by the thermal discharge.

Evidence for the ability of water quality to support beneficial uses in the south Bay is presented below.

A. Water quality in the discharge channel appears to support these Beneficial Uses:

1. IND, Industrial Service Supply; water quality supports industrial activities, uses that do not primarily depend on water quality, including cooling water supply, gravel washing, fire protection, or well re-pressurization; and
2. NAV, Navigation; water quality supports shipping, travel, or other transportation by private, military, or commercial vessels.

B. Water quality in the discharge channel may also support these Beneficial Uses:

1. COMM, Commercial and Sport Fishing. Commercial and Sport Fishing could probably be supported by water quality in the discharge channel especially when high densities of anchovies are found there.
2. REC-1, Contact Water Recreation and REC-2, Non-Contact Water Recreation. Water quality in the channel probably would support water contact and non-contact recreational uses.
3. RARE, Rare, Threatened, or Endangered Species. Water quality in the discharge channel during the cooler months appears to support the presence of forage fish for endangered bird species, such as the least tern. Endangered green sea turtles are often seen swimming in warm effluent in the inner basin.

C. The following uses should exist in the discharge channel; however, water quality does not appear to support these uses everywhere in the discharge channel:

1. BIOL, Preservation of Biological Habitats of Special Significance; support of designated areas or habitats such as established refuges or ecological reserves. The Power Plant discharges to the South Bay Unit of the San Diego National Wildlife Refuge. The Duke Energy 316(a) report notes that eelgrass would be excluded from approximately 103 acres due to the thermal discharge at maximum cooling water circulation rates during part of the year.
2. EST, Estuarine Habitat; support of ecosystems including preservation of vegetation, fish, shellfish, or wildlife including estuarine mammals and birds. The Duke Energy 316(a) report notes that eelgrass would be excluded from approximately 103 acres due to the thermal discharge at maximum cooling water circulation rates during part of the year.
3. MAR, Marine Habitat; support preservation of vegetation such as kelp, fish shellfish, or wildlife (marine mammals and birds). Eelgrass beds in San Diego Bay provide nursery habitat for fish, and food for fish, invertebrates, and birds. The Duke 316(a) report notes that eelgrass is excluded from the discharge channel during part of the year.

D. The following Beneficial Uses may or may not be supported by water quality in the discharge channel; however, because of physical barriers, ambient water temperatures in the south Bay, or the presence of human populations and development these uses may not exist for reasons unrelated to the thermal discharge.

1. SPWN, Spawning, Reproduction, and/or Early Development; support of high quality aquatic habitats suitable for reproduction and early development of fish. According to the Basin Plan, this use is applicable for the protection of anadromous fish, fish that swim from salt to fresh water to spawn. Common anadromous fish include steelhead trout and salmon. Based on a statement in Federal Register Vol. 65 No. 244 the National Marine Fisheries Service does not appear to believe suitable habitat exists in southern San Diego County. The Service has not designated south San Diego Bay as habitat for migrating steelhead trout.

2. MIGR, Migration of Aquatic Organisms; support of habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms such as anadromous fish. Common anadromous fish include steelhead trout and salmon. Based on a statement in Federal Register Vol. 65 No. 244 the National Marine Fisheries Service does not appear to believe suitable habitat exists in southern San Diego County. The Service has not designated south San Diego Bay as habitat for migrating steelhead trout.

3. WILD, Wildlife Habitat; support of terrestrial habitats and wildlife water and food sources. The Duke Energy 316(a) report notes that eelgrass is excluded from the discharge channel although it is not clear whether potential eelgrass beds located in the discharge channel would be exploited by wildlife.

4. SHELL, Shellfish Harvesting; support of habitats for the collection of filter-feeding shellfish (clams, oysters, and mussels) for human consumption, commercial, or sport purposes. Public access to the discharge channel is limited near the property line of the South Bay Power Plant.

Recognizing that a complete set of pre-discharge data do not exist for the discharge channel, and that south San Diego Bay was already degraded during the 1950s and early 1960s because of overloaded sewage plant discharges into the Bay, it is not possible to define with certainty the water quality that would exist in the absence of operation of the power plant.

Reduced effluent flows or reduced effluent temperatures appear to be needed to restore all Beneficial Uses to the discharge channel during August and September. The Duke Energy 316(a) report notes that in the discharge channel area nearest the power plant, high temperatures may limit the occurrence of eelgrass or cause seasonal die-off of eelgrass.

References

Duke Energy 316(a). 2004. Volume I: Compliance with Section 316(a) of the Clean Water Act A.2 for the South Bay Power Plant. Prepared by Tenera Environmental, San Luis Obispo, California and Merkel & Associates, San Diego, California for Duke Energy South Bay, LLC, San Diego.

Duke Energy 316(b). 2004. Volume II: Compliance with Section 316(b) of the Clean Water Act A.2 for the South Bay Power Plant. Prepared by Tenera Environmental, San Luis Obispo, California for Duke Energy South Bay, LLC, San Diego, California.

Ranasinghe, Ananda. 2004. Southern California Coastal Water Research Project, Westminster, California, personal communication to Peter Michael.